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Abstract

At the forefront of current discussion and social conscience is the importance of ecological sustainability. An also important but often overlooked issue is the importance of sustainable budgeting practices for our various levels of government. Governments often provide social services such as food, clothing, shelter, education, public safety, or health care. If the money to pay for the social services comes from additional government debt, social services to future citizens become imperiled. In this paper, the authors set forth a theoretical framework for sustainable government decision making with special emphasis on sustainable governmental budgeting. The authors outline the intricacies of sustainable budgeting, describe why sustainable budgeting is important, and illustrate which countries and states are doing the best and worst jobs of sustainable budgeting. Finally, the authors offer practical advice for creating sustainable budgeting practices.

The Argument for Sustainable Budgeting

Government spending and taxing decisions occur in a dynamic inter-temporal framework. Politicians have an incentive to provide the services demanded by the electorate. Those that are seen as providing more for their constituents tend to get re-elected. On the other hand, the electorate is generally averse to taxes. This is where politicians and government officials can seek to maximize their short term political popularity by providing high levels of government services without paying for them. In this way they maximize their goals for one generation rather than over all generations. The subsequent debt buildup that comes from unfunded spending has a deleterious impact on the ability of governments to provide similar services to future generations.

In this way, choices made by governments affect incentives and outcomes not only for people today, but for generations to come. The success and/or failure of government decisions, then, must be measured over time. Do these decisions create a sustainable environment for the government and both current and future citizens?

Government can serve many roles including the defense of people, protection of property and the environment, and the provision of public goods. Each government must determine its optimal level of protection, provision, and redistribution. Additionally, it must structure its decision making to ensure that these goals are met in such a way for the current generation that they do not take away from the government's ability to meet the same goals for generations to come.

A sustainable government budget meets the goals of the government for current constituents without impairing the meeting of these goals for future generations. Sustainable government budgeting meets the following criteria: current consumption is paid for by current taxes; pension promises are fully funded; debt/GDP ratios are stable

or declining over time; and wealth generated from nonrenewable government owned resources must be saved for the benefit of future generations. Fiscal sustainability can be measured by examining a country's unfunded liabilities, its use of nonrenewable resources, and its debt as a percentage of its GDP (Chalk and Hemming 2000).

The purpose of this paper is to set forth a theoretical framework for sustainable government decision making with special emphasis on sustainable governmental budgeting. In the sections that follow, the authors illustrate ways in which fiscal sustainability can be measured, demonstrate why sustainable budgeting is important, and describe the countries and states that are doing the best and worst jobs of sustainable budgeting. The paper concludes by offering practical advice to help create sustainable budgeting practices.

Measuring Fiscal Sustainability

The core of fiscal sustainability is the act of paying for consumption when it happens. Calculating consumption for a multi-trillion dollar economy is not an exact science. There are, however, measurable variables that provide insight into the fiscal sustainability of a government. The treatment of government pensions/entitlements, the percentage of Gross Domestic Product (GDP) that the government owes in accumulated debt, and the government's treatment of its nonrenewable resources can be measured to assess the fiscal sustainability of a government over time. Each of these factors is explained in more detail below.

Current Consumption

Consumption entails using resources for a one time benefit. Governments' provision of public goods (public safety, education, parks, etc) to their citizens qualify as consumption. So do income redistribution programs such as welfare, unemployment insurance, and social security. The vast majority of government spending is of a consumption nature. It is meant to help people meet the needs and wants of today.

Some government spending in any given year may be to benefit citizens in the future. If $10 million is spent to build a school, the amount of public consumption is not $10 million in the first year of the school's construction. Public consumption of that capital for a year is the amount of capital depreciation that occurs over the course of the year. The rest is public investment.

It is important to note that fiscal sustainability does not require that new public investment be paid for in full as it occurs. It does, however, need to be paid in full over the lifetime of the improvement's benefits in accordance to those year's benefits. Furthermore, calling consumption "investment" doesn't make it so. Therefore, the reality of fiscal sustainability hinges on the proper definition of current consumption.

Pension Promises

Governments often offer defined benefit pensions to public employees. These benefits are contractually due to the employees upon retirement. In effect, their years of labor were voluntarily traded for the promise of a future payment in retirement. Sustainable budgeting requires that all new pension obligations that are generated in a given year must be paid for with resources from that year. It follows the same principle as paying for current consumption. If you use the services of an elementary school teacher this year, you must pay for them this year and that includes all promises of future payments earned from that year's work. Actuaries regularly audit pension systems and report their level of funding. Any funding level less than 100% is not reflective of sustainable government budgeting; rather, it reflects current consumption at the expense of future consumption.

Various governments have also instituted public pension systems for their citizens. In the US, the federal government established Social Security in 1935. Just as public employee pensions must be actuarially fully funded, so too must be public pension systems be fully funded for a sustainable budget to exist. The key principle is that every promise of a payment to someone must be backed with real current dollars. Pension systems that are pay-as-you-go inherently violate the rules of sustainable budgeting. To be sustainable, current workers can't be asked to pay for current retirees' pensions because those retirees provided services consumed in the past.

Debt/GDP Ratios

Sustainable budgeting also requires a stable or declining debt/GDP ratio from business cycle to business cycle. The ratio may increase during a recession, but then it must decrease during economic expansion. Many governments have gotten into trouble not only spending all the money they bring in during expansion years, but also making future pension promises based on the false assumption that economic expansion will continue every year.

Over time, debt/GDP will only stabilizes or fall if the economic growth rate exceeds the budget deficit. As long as the budget deficit is smaller than the growth rate, the burden of sovereign debt will fall. That is, richer governments will be able to afford higher debt payments. On this point, two philosophies diverge as to the meaning of sustainable government. If a generation only is to consume what it pays for, then governments should not have rising debt levels, period. Alternatively, if sustainability entails making the next generation at least as well off as the current generation, then the current generation can borrow money up to the point where the added burden of the debt lowers future expected incomes to current levels.

The problem for the second line of thought comes in defining future expected incomes. There is no way to know the future or know what incomes will be in the future. The only way to guarantee that a government is running a sustainable budget is for them not to

increase their debt from one business cycle to the next (unless the full amount of said increase is due to increased investment in long lived public capital).

Nonrenewable Resources

Many governments also own natural resources such as land, oil, natural gas, and minerals. To the extent that these are non renewable, the sale of these assets for revenue should result in the betterment not just of the current generation, but all future generations. Therefore, profits from the sale of oil from government owned land/water must be saved for future generations. That is, said profits cannot be used to fund only current consumption.

Governments also own access to renewable resources such as forests. Sustainable budgeting requires that the profit from the use of renewable resources must be used to benefit people over the length of time it takes for the resources to renew themselves. For instance, if a forest can be logged every thirty years, the profits from said logging need to benefit people for thirty years. On the other hand, governmental profits made from immediately renewable resources (wind) can be spent to finance current consumption once depreciation of capital (wind turbines) is taken into account.

Sustainable budgeting is an all inclusive approach to public budgets. Given the multiple criteria involved, any given government might meet some but not all of the criteria. Some may come closer than others to meeting, but still missing, the criteria set forth. Nevertheless, failure by a government to meet all of the above criteria required for sustainable budgeting will result in future generations being billed for current consumption.

Why is Sustainable Budgeting Important?

Sustainable budgeting offers two major benefits: ensuring intergenerational equity and faster economic growth. What role does sustainable budgeting play in intergenerational equity? Politicians, looking to get votes, often enact policies that engage in current consumption while passing on the bills to future generations who are not yet able to speak for themselves.

When governments fail in their fiduciary responsibilities, the result is that people become accustomed to over-consumption. They feel entitled to it. When countries get to the point of bankruptcy they often have to enact austerity measures. These measures typically include a reduction in public sector pay/pensions and a reduction in welfare benefits.

People often go to the streets, as they are now doing in Greece, to protest the reduction in these payments. The problem is that most rioters misunderstand the cause of their frustration. The reason that benefits have to be reduced is because previous voters voted

themselves benefits they could not pay for. The source of their anger should not be the government austerity programs, but the politicians who overspent and the voters who supported said overspending. Is it fair or just that older Greeks got to live more lavish lifestyles than will younger Greeks? No. Is the problem with the austerity programs? Not remotely. To say so would be to blame the doctor who prescribes you a cure for your disease rather than blame the disease itself for your misery.

Additionally, sustainable budgeting leads to faster future economic growth. With respect to economic growth, President Kennedy once said that, "a rising tide lifts all boats" (1963). Economic growth benefits consumers both today and tomorrow.

Research by Reinhart and Rogoff (2009) indicate that countries with a debt/GDP ratio under 30% historically have had the highest rate of economic growth at a 4.1% annual rate. That is, the less the current generations take from future generations, the faster the economy grows for everyone. As the next section discusses, only three advanced countries (Hong Kong, Luxemburg, and Australia) have a debt/GDP ratio less than 30%.

Reinhart and Rogoff's research indicate that historically, countries with a higher than 90% debt/GDP ratios have had a -.1% economic growth rate. In other words, by running up debt yesterday, these economies are actually growing poorer by the day. Not only does the fiscal imbalance entail an intergenerational transfer of wealth, it also impoverishes future generations by slowing down their trajectory of economic growth. Put another way, countries with debt/GDP ratios over 90% end up taking money from future generations to give it to the current relatively wealthier generation.

Most definitions of social justice would frown upon the transfer of money from the poor to the rich just so the rich can consume more. The political process makes this transfer possible, but it doesn't make it just. In the next section, the authors examine which governments are faring the best and worst with respect to sustainable budgeting.

Sustainable Budgeting Successes and Failures

Which countries are doing the best job of sustainable government budgeting? While a micro level deconstruction of budgets is needed to determine the amount of current consumption in a government's budget, data on debt/GDP ratios, unfunded pension liabilities, and sovereign wealth funds paint a good picture of which governments are running sustainable budgets.

Debt/GDP

Table 1 lists the top ten advanced countries with the lowest debt/GDP ratios. These are the countries that are doing the best job of paying for current consumption with their current revenues. Although there is great variation in the amount of public sector involvement in the countries listed, these countries have all kept their spending in line

with the revenues they collect. However, with the current global economic recession, these countries are all currently running slight budget deficits. Hong Kong and Switzerland are running the smallest budget deficits. The only countries in the list to currently have a debt/GDP ratio under 30% are Hong Kong, Luxembourg, and Australia.

Table 2 illustrates the ten advanced countries with the highest debt/GDP ratios. There are currently seven advanced (many more in the developing world) economies that fall over the 90% threshold. They are Japan, Iceland, Greece, Italy, Belgium, US, and Singapore. These countries are in a serious need of budget reform to lower their debt/GDP ratio. The three countries that stand out are Iceland, Greece, and the US, as they continue to borrow money at a record pace.

Table 1
Ten Advanced Countries with the lowest Debt/GDP and Deficit/GDP ratios

Country	IMF Debt/GDP	*The Economist* Deficit/GDP
1. Hong Kong	.6%	.2%
2. Luxembourg	20.0%	5.4%
3. Australia	20.6%	3.1%
4 . New Zealand	31.3%	4.3%
5. South Korea	34.7%	4.1%
6. Slovenia	35.6%	5.2%
7. Czech Republic	37.9%	5.2%
8. Slovakia	38.4%	5.4%
9. Switzerland	43.6%	1.3%
10. Sweden	44.7%	3.0%

Table 2
Ten Advanced Countries with the highest Debt/GDP and Deficit/GDP ratios

Country	IMF Debt/GDP	*The Economist* Deficit/GDP
1. Japan	228.6%	7.8%
2. Iceland	131.2%	11.0%
3. Greece	129.5%	9.5%
4. Italy	117.6%	5.0%
5. Belgium	100.9%	6.6%
6. US	91.8%	10.5%
7. Singapore	91.4%	2.7%
8. France	84.9%	8.6%
9. Canada	84.8%	3.7%
10. Portugal	83.3%	8.5%

Economic growth is slowed not only by high levels of debt but also by the country's likelihood of defaulting on current debt repayment. Table 3 highlights the ten governments investors deem most likely to default on their debt. Clearly these countries are not engaged in sustainable budgeting. Argentina, who has defaulted twice in the last twenty years, comes in just behind Venezuela and ahead of Greece for having the worst financial management.

Table 3
Top Ten Governments most likely to default on their debt

Rank	Country/ State	May 17, 2010 Risk of Default (CPD %)
1.	Venezuela	50.26
2.	Argentina	45.22
3.	Greece	41.47
4.	Pakistan	37.36
5.	Ukraine	33.69
6.	Dubai	26.31
7.	Portugal	21.46
8.	California (US)	21.15
9.	Latvia	21.12
10.	Sicily (Italy)	20.67

Source: CMA Sovereign Risk Monitor

Fiscal sustainability applies to sub-national levels of government as well. In the United States, some states are more indebted than others. As Table 4 illustrates, seven US states have a debt/GSP (gross state product) ratio under 1%. They are Nebraska, Iowa, Wyoming, Tennessee, South Dakota, Colorado, and North Dakota. But for Tennessee, this group is largely concentrated in the Great Plains.

Table 4
Top Ten States with lowest Debt/GSP

State	Per Capita Debt	Debt/Gross State Product
1. Nebraska	$17	0.0%
2. Iowa	$79	.2%
3. Wyoming	$84	.2%
4. Tennessee	$233	.7%
5. South Dakota	$274	.7%
6. Colorado	$340	.8%
7. North Dakota	$356	.9%
8. Arkansas	$375	1.3%
9. Montana	$391	1.4%
10. Utah	$447	1.4%

Source Forbes Magazine 1/20/2010

The states with the highest debt/GSP ratios are Hawaii, Massachusetts, Connecticut, and New Jersey. They all have debt/ GSP ratios over 8%, so they possess more than eight times as much debt as the most prudent US states. While California has a high public debt, they also are the most populous state in the country. As a percentage of gross state product, their debt does not place them in the bottom ten states in terms of debt/ GSP. However, the raw size of the amount of money they need to borrow combined with their inability to make spending cuts/raise taxes has left California with the worst bond rating of any US state. In fact, they have one of the top ten highest sovereign default risks in the world (see Table 3).

Table 5
Top Ten Worst Debt/Gross State Product

State	Per Capita Debt	Debt/Gross State Product
1. Hawaii	$3,675	9.5%
2. Massachusetts	$4,323	9.0%
3. Connecticut	$4,490	8.8%
4. New Jersey	$3,621	8.1%
5. Mississippi	$1,478	6.1%
6. New York	$2,921	5.9%
7. Washington	$2,087	5.2%
8. Rhode Island	$1,812	5.0%
9. Kentucky	$1,477	5.0%
10. Illinois	$1,877	4.7%

Source Forbes Magazine 1/20/2010

Unfunded Liabilities

Most US states have unfunded pension liability. The Pew Center for the States estimated that unfunded liability for state pensions systems exceed $1 trillion in 2008. That was before the market crash. Today's Pew estimates exceed $2 trillion. Economists Joshua Rauh and Robert Novy-Marx (2009) have put the value over $3 trillion. Nebraska, North Dakota and Tennessee, not only have the lowest debt but are also among the states with the least amount of unfunded pension liability. Thus, they are doing the best job at passing sustainable budgets.

Many of the most indebted states also have the highest levels of unfunded pension liability. Hawaii, Kentucky, Illinois, Mississippi, and Rhode Island are all among the ten most indebted states and the ten most underfunded pension systems. These five states have illustrated the least amount of sustainable government budgeting. Their failure will put tremendous strain on their future ability to provide public services to their state constituents over time.

Table 6
2008 Top Ten Least Unfunded Pension Liability

State	Per Capita Unfunded Pension Liability	Unfunded Liability Gross State Product
1. Delaware	$6,872	12.4%
2. Nebraska	$4,878	13.5%
3. North Dakota	$6,080	16.4%
4. Tennessee	$5,229	16.5%
5. New York	$8,620	17.4%
6. North Carolina	$6,300	17.7%
7. Virginia	$7,556	18.4%
8. Massachusetts	$9,249	19.3%
9. New Hampshire	$7,524	19.6%
10. Florida	$6,389	19.6%

Source Forbes Magazine 1/20/2010

Table 7
2008 Top Ten most Unfunded Pension Liability

State	Per Capita Unfunded Pension Liability	Unfunded Liability/ Gross State Product
1. Rhode Island	$20,271	58.7%
2. Ohio	$19,110	57.9%
3. Mississippi	$12,523	53.3%
4. Wisconsin	$16,418	47.1%
5. Alaska	$18,797	43.9%
6. Illinois	$17,230	43.5%
7. Kentucky	$12,555	42.8%
8. Alabama	$12,205	41.9%
9. Hawaii	$15,525	40.8%
10. Oklahoma	$11,806	39.1%

Source Forbes Magazine 1/20/2010

With the US national debt approaching $13 tillion (over $40,000 per person), the current unfunded liability in Medicare and Social Security is roughly $104 trillion according to the President of the Dallas Federal Reserve (2010). That's $330,000 per person. Ninety percent of the US unfunded liability comes from Medicare. Left unchecked, the US federal government is on a collision course with fiscal disaster. Piling on more current consumption without paying for it, simply isn't possible without seriously jeopardizing the future standard of living for all Americans.

The US federal government is not alone in unfunded liabilities among developed countries. Even in 2003, Europe's unfunded pension liabilities were already beginning to pile up, as Table 8 illustrates. In contrast, countries such as Japan, Norway, Netherlands,

and Canada lead the way in funding its pension liabilities with fully funded public pension systems.

Table 8
Pension Liabilities as a % of GDP 2003

Country	Pension Liability as a % of GDP
1. Greece	807%
2. Spain	717%
3. France	407%
4. Portugal	396%
5. Belgium	395%
6. Finland	379%
7. Italy	352%
8. Denmark	317%
9. Austria	292%
10. Sweden	264%

Source: ABN AMRO 2003

Sovereign Wealth Funds

Any country which uses nonrenewable resources to support current consumption is not engaged in sustainable budgeting. The countries that have done the best job of saving oil revenues for the sake of future citizens are Abu Dhabi, Norway, and Saudi Arabia. China also has done a remarkable job of saving for the future. Their decisive savings strategy will serve to make future generations of Chinese people some of the richest people in the world.

Table 9a
Sovereign wealth in March 2010, in Billions

Country	Fund Name	Assets	Origin
1. UAE – Abu Dhabi	Abu Dhabi Investment Authority	$627	Oil
2. Norway	Government Pension Fund-Global	$443	Oil
3. Saudi Arabia	SAMA Foreign Holdings	$432	Oil
4. China	SAFE Investment Company	$347.1	Non Commodity
5. China	China Investment Corporation	$288.8	Non Commodity
6. Singapore	Gov. of Singapore Investment Corp.	$247.5	Non Commodity
7. Kuwait	Kuwait Investment Authority	$202.8	Oil
8. Russia	National Welfare Fund	$168	Oil
9. China	National Social Security Fund	$146.5	Non Commodity
10. China/Hong Kong	Hong Kong Monetary Authority Investment Portfolio	$139.7	Non Commodity

Source: Sovereign Wealth Fund Institute: http://www.swfinstitute.org/funds.php

Table 9b
Sovereign wealth in March 2010, in Billions

State	Fund Name	Assets	Origin
Alaska	Alaska Permanent Fund	$35.5	Oil
New Mexico	New Mexico State Investment Office Trust	$12.9	Non-Commodity
Wyoming	Permanent Wyoming Mineral Trust Fund	$ 3.6	Minerals

Source: Sovereign Wealth Fund Institute: http://www.swfinstitute.org/funds.php

The three US states that have used current wealth to save for the future are Alaska, New Mexico, and Wyoming. Many other states have oil, natural gas, coal, and other natural resource revenue entering their state coffers, but they neglect to save it for the benefit of future generations. This is yet another way in which most US states are not engaged in sustainable budgeting.

Recommendations for the Future

Governments that practice sustainable budgeting provide intergenerational economic growth and equity to their citizens. Sustainable budgeting is a must for any government which is supposed to look out for all of its citizens (both current and future). The roadmap for success has been marked by different countries which have engaged in large amounts of fiscal stewardship. By using them as examples, citizens can try to persuade their government officials to act accordingly. The keys to sustainable budgeting are transparency, education, and rule making.

Citizens need to be made aware of their governments' financial commitments. This requires financial transparency of governments' books. Rather than keeping certain parts of the books, "off-budget", a government should clearly state its aggregate levels of taxing and spending along with where the money is specifically coming from and going to. In this way, interest groups can hold the government accountable. They can also see if governments are accomplishing their clearly defined social goals.

Facts matter. In a democracy where politicians are only as good as the people who elect them, the general public needs to gain an understanding of personal and public finance. Schools should teach sustainable budgeting at the personal level and what it means for governments. People need to learn just how bad government decisions have historically been, and how to fix them. Voters will keep voting for politicians who promise the world for only $19.95 unless they become educated regarding the true costs of government debt. Economics/finance should be part of the required high school and college curriculum.

The easiest way to get governments to create sustainable budgets is to require them to do so. Balanced budget amendments that require stable/decreasing debt/GDP ratios over the business cycle would be a start. Mandating that pensions and other government liabilities be actuarially fully funded is an absolute must. Current consumption must not be passed onto the taxpayers of tomorrow. Extraction of government owned non renewable resources should generate revenue for future generations through sovereign wealth funds. These funds should not be tapped to finance current consumption.

Citizens will be rewarded for their governments' fiscal responsibility and punished for their fiscal irresponsibility for generations to come. The choice of whether or not to move to a system of sustainable budgeting is left up to the voters in a democracy. The better educated voters are regarding the impact of budgeting on their lives, the better governments they will vote for, and the wealthier and more just their society will be.

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